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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/270,688	03/16/99	YOUNG	D 2407-0004

QM12/1209

SIXBEY, FRIEDMAN, LEEDOM & FERGUSON
8180 GREENSBORO DRIVE SUITE 800
MCLEAN VA 22102

EXAMINER	
ERGENBRIGHT,E	
ART UNIT	**PAPER NUMBER**
3722	7

DATE MAILED: 12/09/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/270,688	Applicant(s) Young et al.
	Examiner Erica Ergenbright	Group Art Unit 3722

☒ Responsive to communication(s) filed on *Mar 16, 1999* .

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *3* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-4 and 6-30* is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-4 and 6-30* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on *Mar 16, 1999* is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *6*

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

Faxing of Responses to Office Actions

1. In order to reduce pendency and avoid potential delays, TC 3700 is encouraging FAXing of responses to Office Actions directly into the Group at (703) 305-3579. This practice may be used for filing papers not requiring a fee. It may also be used for filing papers which require a fee by applicants who authorize charges to a PTO deposit account. Please identify the examiner and art unit at the top of your cover sheet. Papers submitted via FAX into TC 3700 will be promptly forwarded to the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "70" has been used to designate both ducts in Figures 6, 7, 11, and 12, and an angled portion in Figure 9. Correction is required.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "22", in Figure 15A, and "23", in Figures 1, 14 have both been used to designate the support pole. Correction is required.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 55 and 67, shown in Figure 8, 180, shown in Figure 20, step 8, shown in Figure 24, and C', shown in Figure 26. Correction is required.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 34, on page 5, line 22, 100, mentioned in several places, for example, on page 8, line 6, 136, on page 11, line 10, 138, on page 11, line 10. Correction is required.

6. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defects can be deferred until the application is allowed by the examiner.

Claim Objections

7. Claim 1 is objected to because of the following informalities: on line 7, "measure" should be --measured--. Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 3, 6, 11, 12, and 13-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 3, lines 2-3, and claim 16, line 3, it is unclear if the phrase "edges of the foot" refers to the generally vertical sides of the foot, or to the perimeter of the undersurface of the foot.

Claim 6 depends from a canceled claim. It is assumed for purposes of examination that claim 6 properly depends from claim 4. Claim 6 also cites "a plurality of laser scanning units" that "are passed along an undersurface of the foot". The disclosure describes, and the drawings show, one bottom laser scanning unit for scanning the bottom of the foot, and other side laser scanning units to scan the sides of the foot. It is unclear in this claim if the present invention includes multiple laser scanning units to scan the bottom of the foot, or if the undersurface of the foot is intended to include the sides of the foot.

Claim 11 recites the limitation "the computer" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "the scanning station" in line 2 of the claim, and "the milling station" in lines 5-6 of the claim. There is insufficient antecedent basis for these limitations in the claim.

Claim 27 recites the limitation "the computer means" in line 2 of the claim. There is insufficient antecedent basis for this limitation in the claim.

The term "in the vicinity of" in claim 29, line 2, and the terms "high volume" and "low velocity" in claim 30, lines 1 and 2, are relative terms which render these claims indefinite. The term "in the vicinity of" and the terms "high volume" and "low velocity" are not defined by these claims, the specification does not provide a standard for

ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1, 7-16, and 20-30, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,237,520 (hereinafter White) in view of U.S. Patent No. 5.449,256 (hereinafter Sundman). White discloses a system for forming custom footwear products, including insoles (column 3, line 45), where the system includes a scanning station 134 that has an optical scanning head 160 that slides in track 162 to scan the undersurface of a foot (column 7, lines 34-36) when the foot is placed on a reference surface 170. Scanning the foot produces a three-dimensional topographical image of a foot undersurface (column 5, lines 6-8). The scanning unit 134 may be a laser-optic scanner (column 5, lines 45-47). The optical scanning head scans the undersurface of the foot through reference surface 170. Therefore the reference surface 170 is transparent. It is therefore inherent that reference surface 170 is made of tempered safety glass, because the benefits of tempered safety glass are well-known. This scanning

unit 134 may be in communication with a computer control means in the form of a CAD/CAM machine (column 3, lines 49-60) that receives and processes the scanned foot data, and then communicates the processed data to a production machine 112 to produce a custom footwear product, such as an insole (column 3, line 45). White's system includes a display 122 and an input device 126 for entering and displaying customer information (for example, column 9, lines 42-46). White generically teaches the use of a production machine 112 to produce custom footwear products. White does not specifically teach a three-axis milling machine to mill custom shoe insoles, nor does White teach the specific orientations of the computer, display device, input device, or production machine. White's production machine, however, is at a separate location from the scanning device (column 3, lines 64-66), and thus there is a lag time between when a person's foot is scanned, and when that person receives their custom footwear product.

Sundman teaches a system for use in an office environment for milling custom shoe insoles, where this system includes a foot contour measurement machine (column 1, lines 42-43) and a mill 10 for machining the insoles. The mill has a disk drive 15 for receiving the foot contour measurement data, which then controls the x, y, and z, movements of the milling head 21 to produce a desired insole contour (column 5, lines 27-34). To mill the insole, an insole blank 11 is mounted to a support tray 12. The relative motion in x, y, or z directions between the milling cutter and the insole blank may

be achieved by moving the insole blank/tray, and/or by moving the milling head (column 3, lines 25-37). Motion of the milling head 21 and/or the motion of the tray 12 is controlled by stepper motors 51, 55, and 510 that act in response to the data inputted from the contour measurement machine. Sundman's milling station also includes a particle control system with positive-pressure air flow (column 7, lines 39-41) generated by fans, so that particles may be collected in tray 14 and disposed of. The air and the particles flow through channels 67-69, which, being enclosed and having higher pressure than that of the outside air, constitute plenums. The entrance 62 to these plenums is disposed in the vicinity of the milling assembly (column 7, lines 61-62). The velocity of the air flow through each channel is inversely proportional to the volume of air flowing through each channel (column 8, lines 35-41). The air flow velocity is sufficient to eliminate particulate flux from the milling cavity (column 7, lines 45-48). According to the current application on page 7, line 24, the velocity of the air flow must be low enough to grab the debris particles, which Sundman's velocity is.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have substituted Sundman's milling machine that operates in response to collected foot contour data for the production machine taught by White, for the purpose of being able to produce custom shoe insoles while a customer waits, and thus eliminating the lag time between the time the customer's foot is scanned and the time they receive their custom shoe insoles. It would further have been obvious

to one having ordinary skill in the art at the time the invention was made to have moved the computer disk drive of the milling station, taught by Sundman, to the lower portion of the milling station, and to have placed the display device and the input device, taught by White, near the milling station, and to have placed the milling assembly, taught by Sundman, in an upper portion of the milling station, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 86 USPQ 70.

12. Claims 1-4 and 6, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over White and Sundman as applied to claim 1 above, and further in view of Applicant's admission of prior art on page 8, lines 11-15. White and Sundman disclose all of the elements as claimed in claims 1-4 and 6, as described above, except for the following: the specific step of directing a line, particularly a non-focused fan-shaped line of laser light along the undersurface of the foot, and scanning the undersurface of the foot using a plurality of laser scanning units. In the specification on page 8, lines 11-15, Applicant admits that the specifics of the laser technology used in the laser scanners is known in the art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have scanned the necessary portions of the foot with a line, or specifically, a non-focused fan-shaped line of laser light. It would further have been obvious to one having ordinary skill in the art at the time the invention was made to have used multiple laser scanners to scan the undersurface of the foot instead

of just one, as taught by White, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Allowable Subject Matter

13. Claims 17-19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior Art References

14. The prior art references listed in the attached PTO-892, but not used in a rejection of the claims, are cited for their methods or for their device structure. U.S. Patent No. Re. 35,816 (Schulz) discloses a scanner that directs a narrow beam of light at a three-dimensional object to sense the shape. U.S. Patent No. 5,926,388 (Kimbrough et al.) discloses a system that involves a three-dimensional scanner that projects a vertical plane of light onto an object to be digitized, and then transmits the digitized measurements to a computer-controlled milling machine. U.S. Patent No. 5,800,364 (Glennie et al.), U.S. Patent No. 5,088,864 (Yanagida), U.S. Patent No. 5,452,219 (Dehoff et al.), and U.S. Patent No. 5,543,103 (Hogan et al.) all disclose systems for obtaining three-dimensional coordinates of an object and transmitting them to a milling machine. U.S. Patent No. 4,935,635 (O'Harra) discloses a linearly moveable laser scanner.

Contact Information

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica Ergenbright whose telephone number is (703) 308-6395. The examiner can normally be reached on Monday through Thursday from 7:30 a.m. to 5:00 p.m, and every other Friday from 7:30 a.m. to 4:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A.L. Pitts can be reached at (703) 308-2159. The fax number for TC 3700 is (703) 305-3579. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the TC 3700 receptionist whose telephone number is (703) 308-1148.

Andrea L. Pitts
Supervisory Patent Examiner
Group 3700

ee

December 1, 1999